



September 11-13, 2005 ■ Brookings, SD

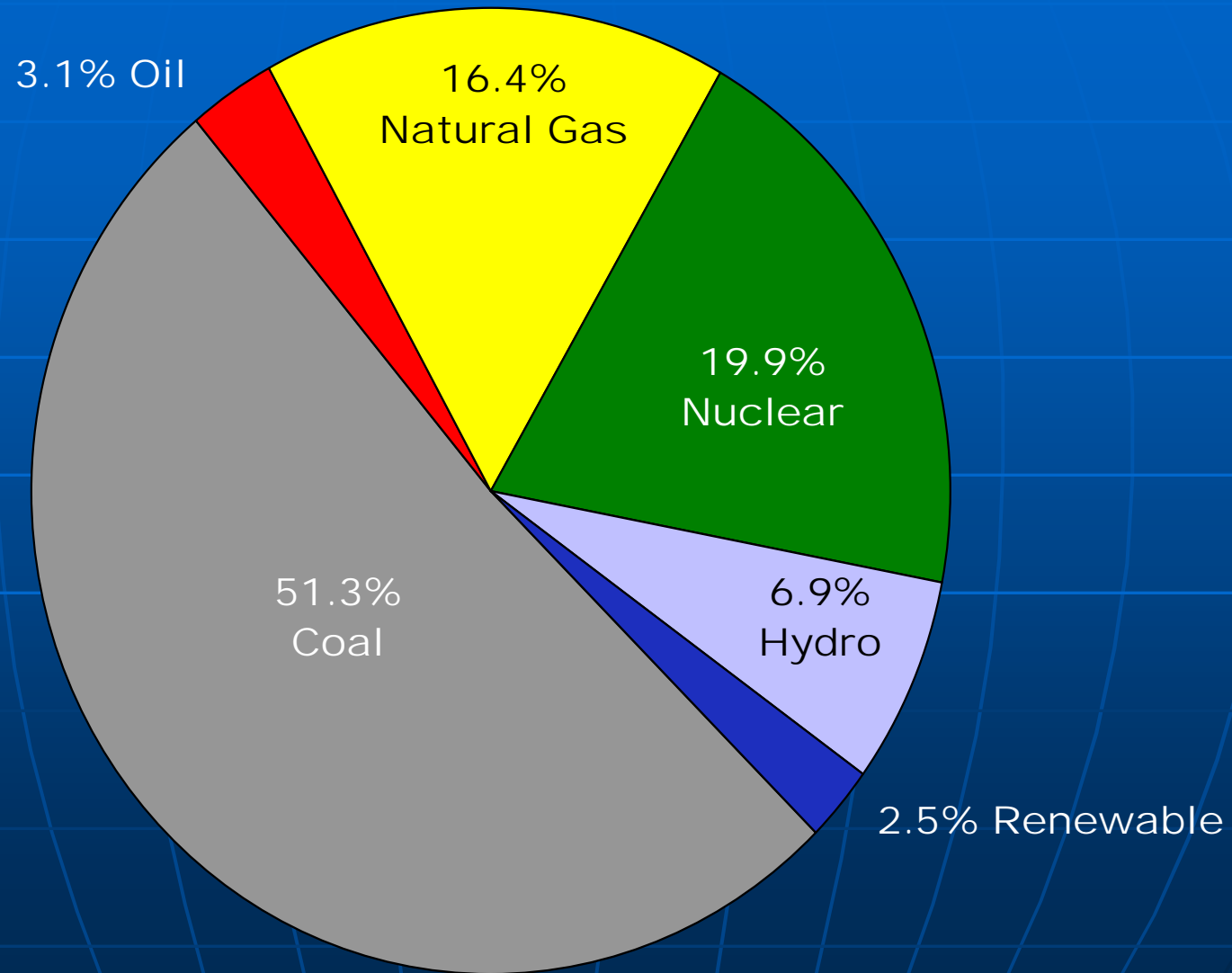
hosted by the

U.S. Department of Energy and the South Dakota Public Utilities Commission

Wind 101

Dusty Johnson and Steve Wegman
SD Public Utilities Commission

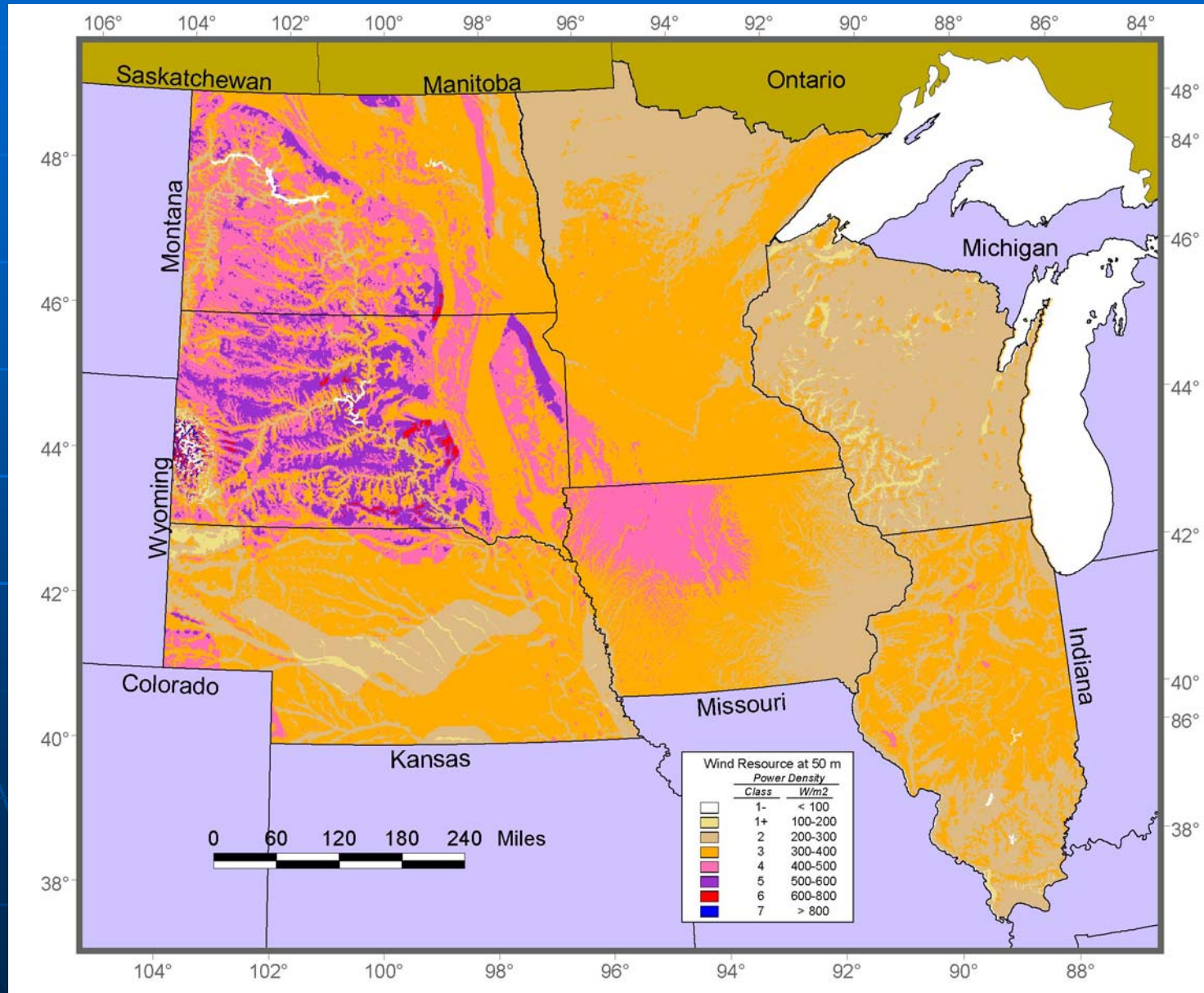
Sources of U.S. Electricity



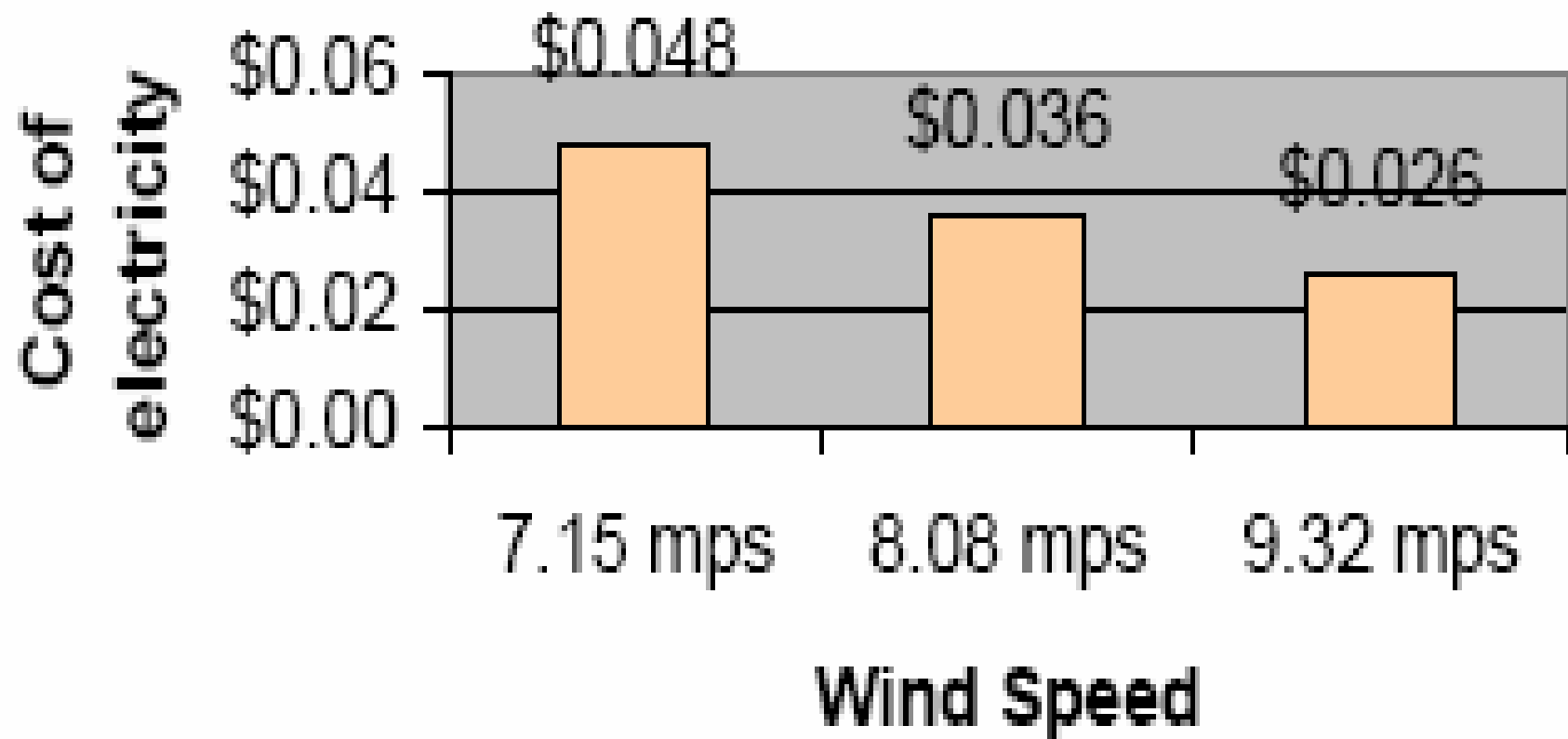
Wind Farm Ingredients

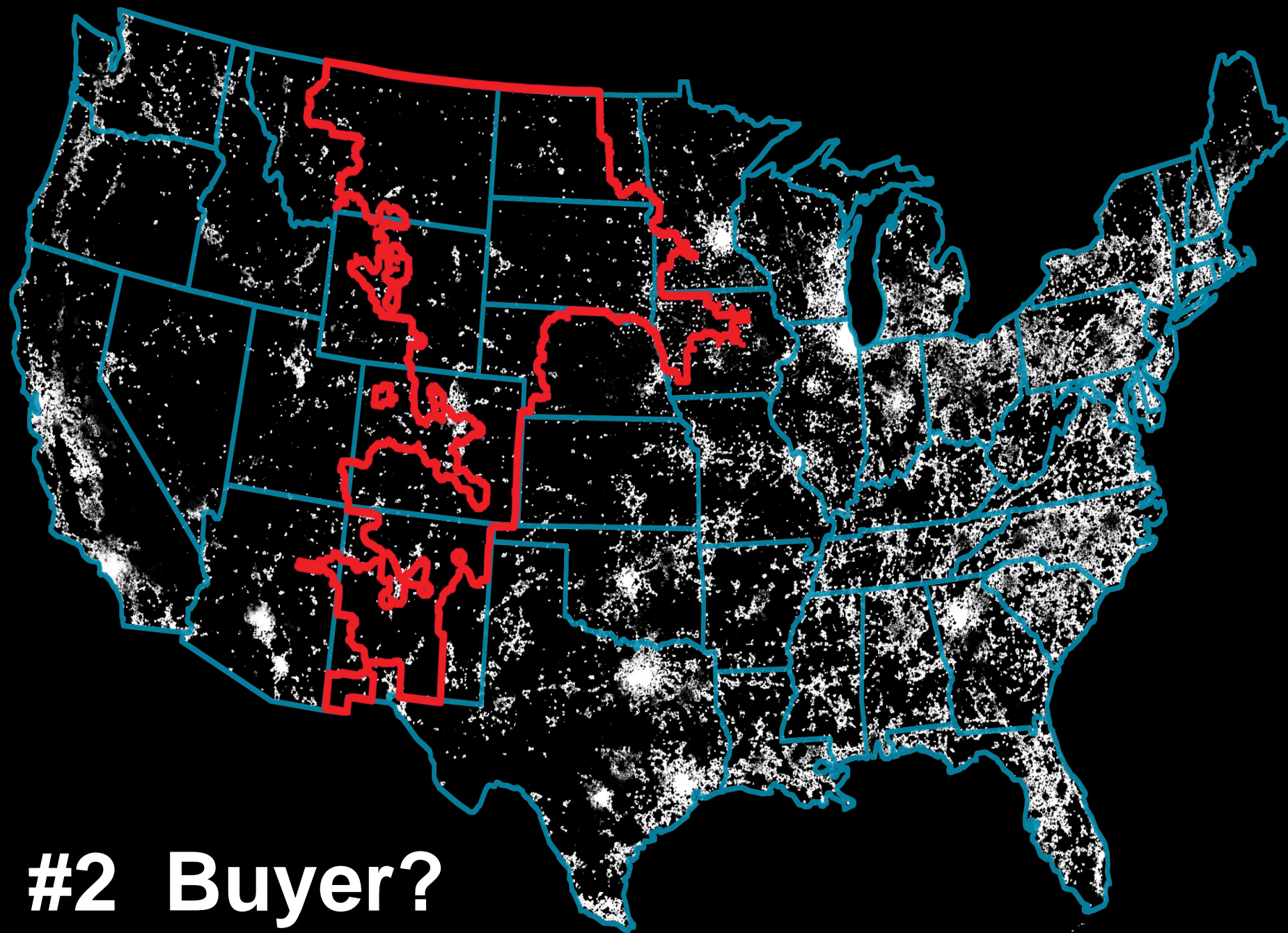
1. Wind
2. Buyer
3. Transmission

#1 Wind?



Cost of energy and Wind Speed





#2 Buyer?

ANNUAL TAX BILL (before 2003 SD Legislature) for 900-kilowatt wind turbine in area states (Taxes include real and personal property taxes whether locally or centrally assessed)

North Dakota

\$2,810

Based on property taxed at rate of 30 percent for first five years of commercial operation. After that, the annual tax liability would be \$9,366.

South Dakota

\$21,478

Based on central assessment rate for operative property of electric utility.

Minnesota

\$293

Property tax: \$0
Production tax: \$293

Minnesota Wind Incentives:

Minnesota also provides developers of projects under 2 megawatts with a state Renewable Energy Production Incentive (REPI) of 1.5 cents per kilowatt-hour for 10 years. It amounts to about \$36,675 per year based on an annual production of about 2.4 million kilowatt-hours per turbine.

Assumes tax rate of 0.012 cents per kilowatt-hour for units under 2 megawatts.

Iowa

\$5,271

Property tax: \$26
Electric Delivery tax: \$3,778
Generation tax: \$1,467

Source: Missouri River Energy Services®

Internal analysis, January 2003

Price of Wind is Dropping...

- Technology Improvements
- Economies of Scale
- Federal Production Tax Credit:

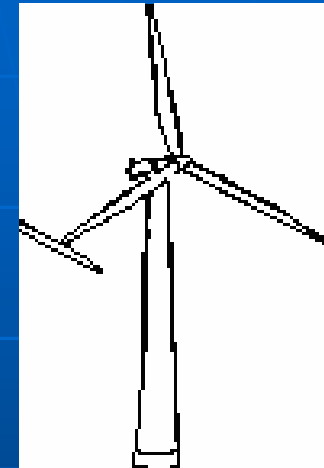
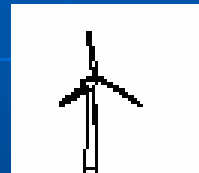
Example: 4.5 cents/kw

1.8 cents/kw PTC

2.7 cents/kw with PTC

PTC = 40 % Reduction

Technological Advancements



1981

1990

2000

Rotor (m)

10

27

71

Rating (KW)

25

225

1,650

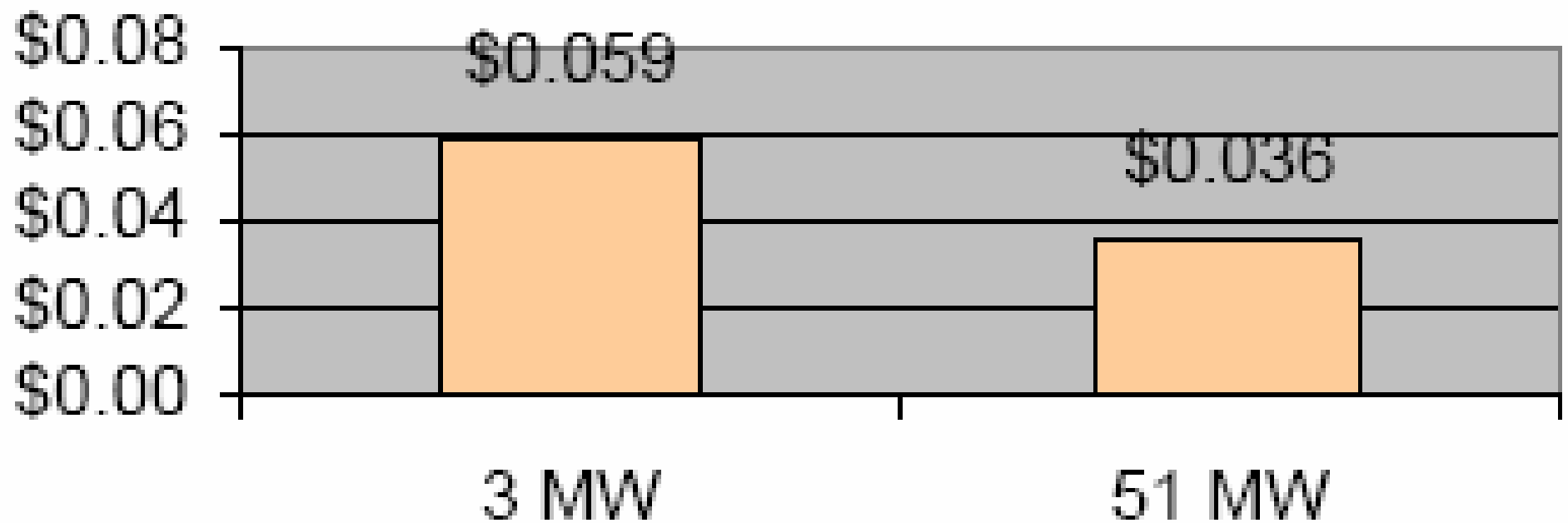
Annual MWh

45

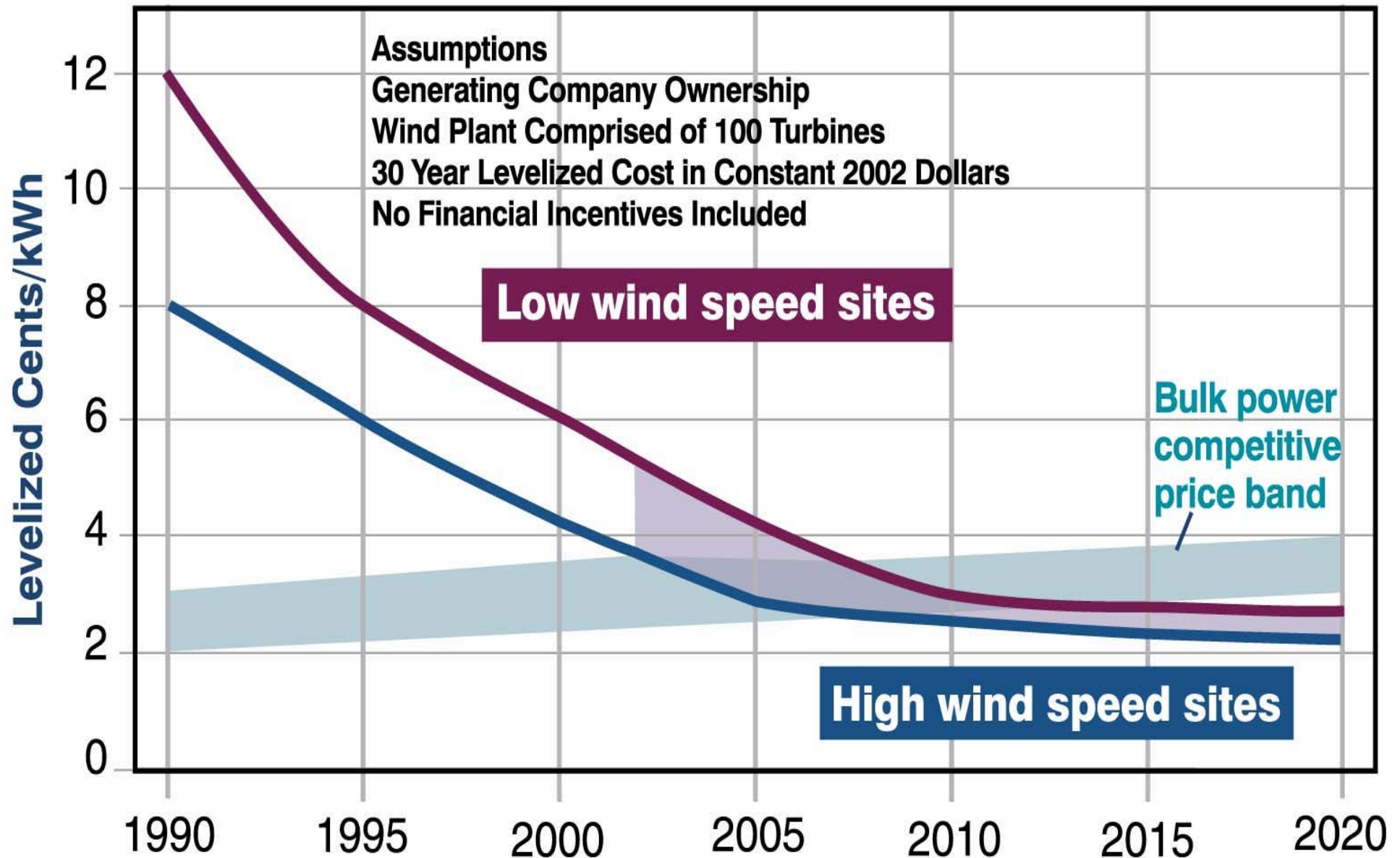
550

5,600

Cost of Energy -- Large Windfarm v. Small

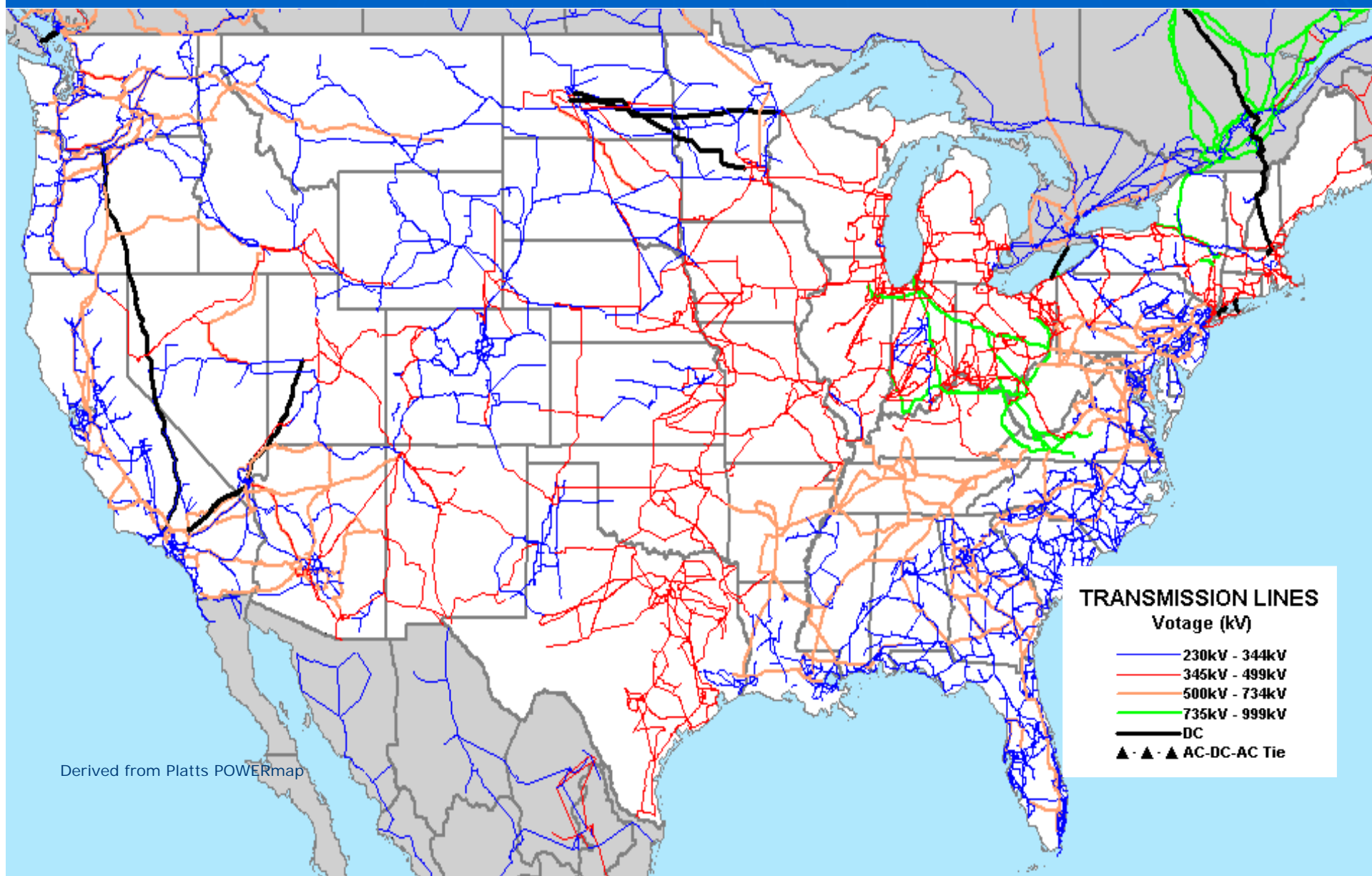


Cost of Wind Energy

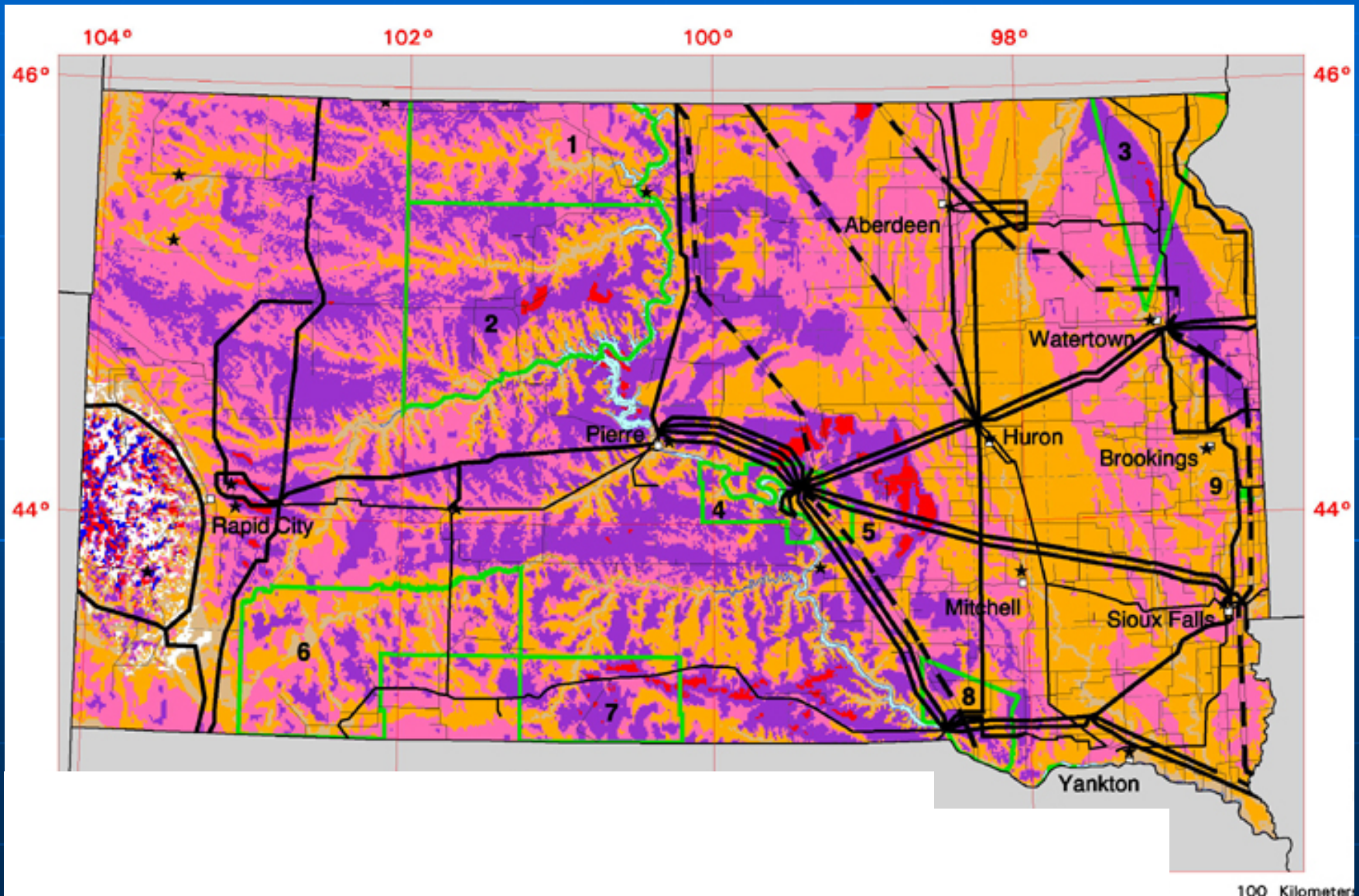


Source: DOE/NREL, 2003

#3 Transmission?

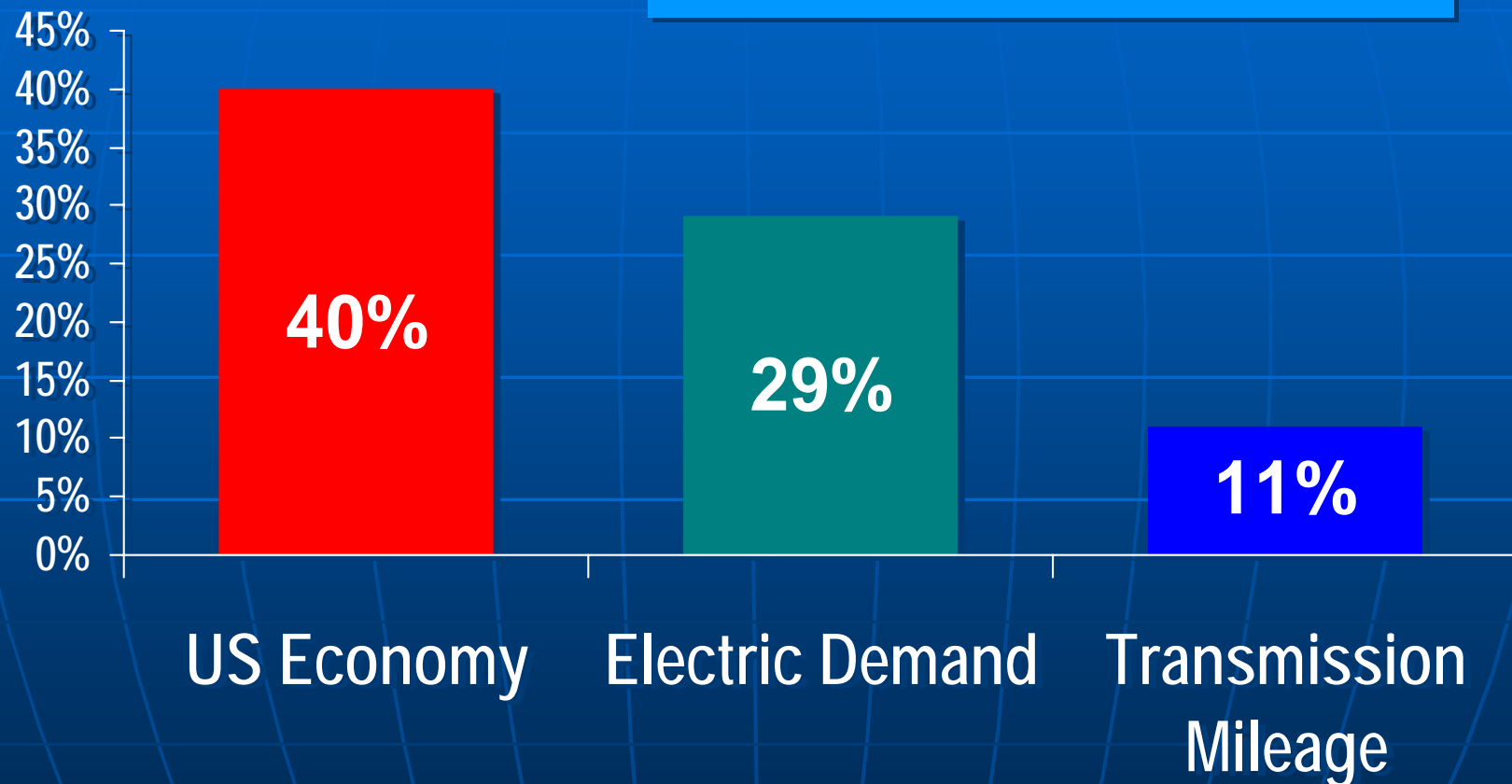


#3 Transmission?

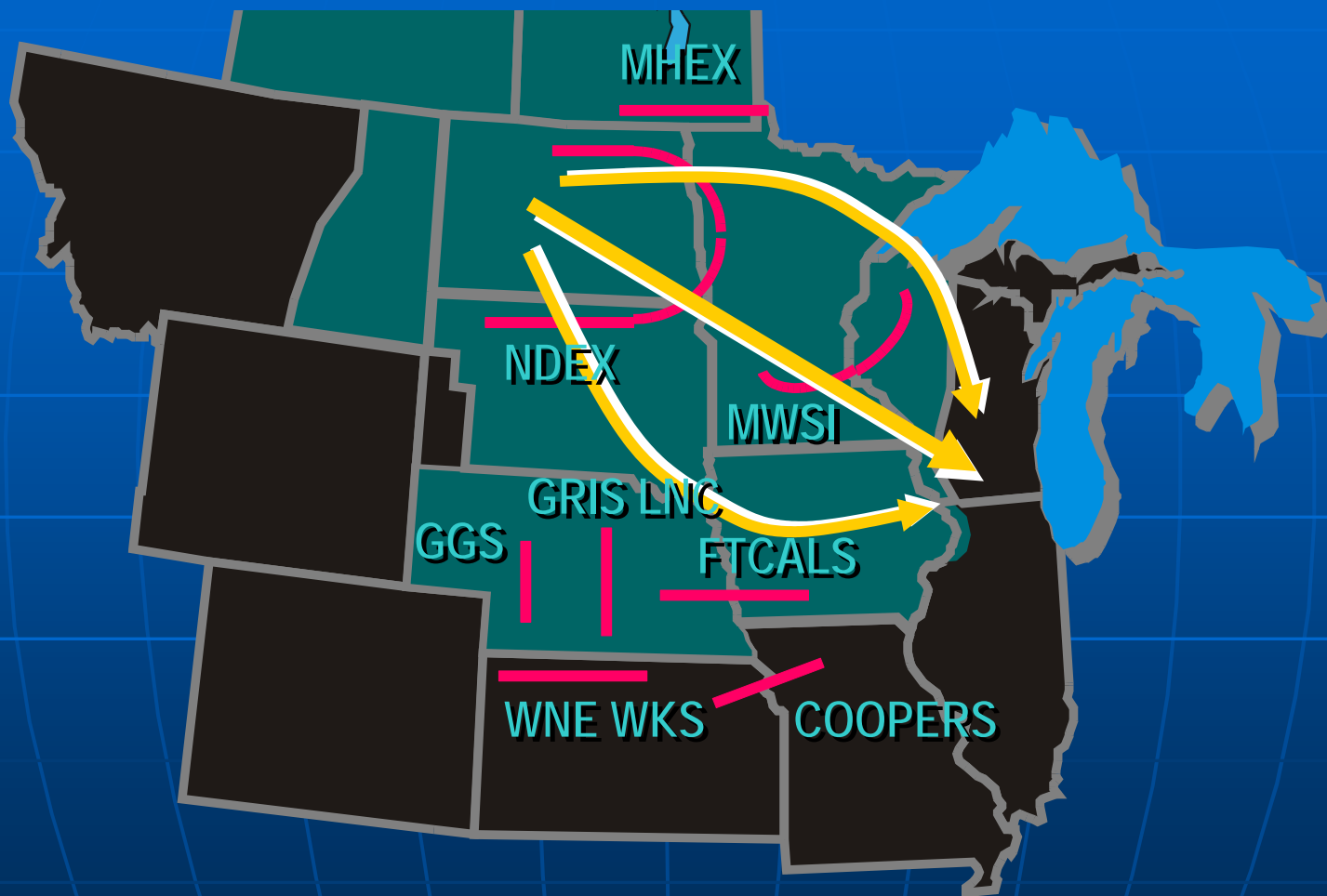


Transmission is not being built...

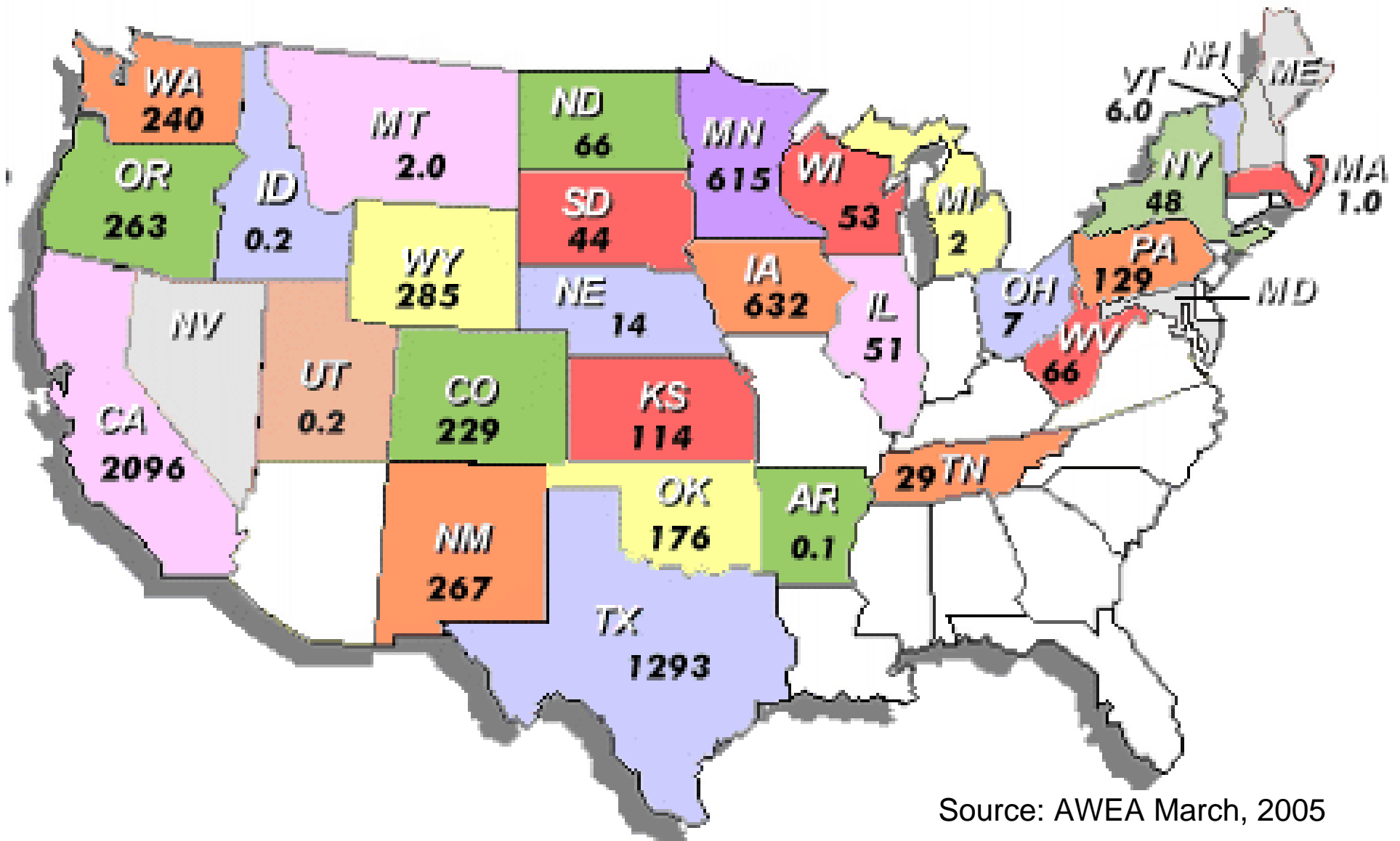
Growth from 1989-2000



Source: FERC



US Wind Power Capacity (MW)



Source: AWEA March, 2005

Hyde County Wind Farm

SD's First Major Wind Farm

- 27 Turbines producing 40 MW
- Constructed by FPL Energy
- Electricity Sold, via Basin Electric, to SD Electric Coops

Benefits

- \$42 Million Investment
- Landowner Payments
- \$250,000 in New Property Taxes

For more information

puc.sd.gov

AWEA.org



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SDSU Wind Resource Assessment Network

